

CLAIMS:

1. A DSRC car-mounted equipment for communicating transmitting and receiving data with an on-the-road equipment comprising:

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a reception sensitivity-increasing means for increasing the reception sensitivity in a communication area with an on-the-road equipment in response to the entrance into a communication start area with the on-the-road equipment; wherein

the reception sensitivity-increasing means returns the reception sensitivity back to the normal reception sensitivity of before entering into the communication start area in response to the end of communication with the on-the-road equipment.

2. A DSRC car-mounted equipment according to claim 1, wherein the reception sensitivity-increasing means includes:

an electric field intensity detector for detecting the electric field intensity of a signal received from the on-the-road equipment;

a comparator circuit that compares with the electric field intensity with a predetermined judging level and outputs an electric field intensity judgement signal when the electric field intensity is not smaller than the judging level; and

a reception control unit for variably setting the judging level in response to the electric field intensity judgement signal; and wherein

the reception control unit changes the judging level into a highly sensitive judging level lower than the normal judging level in response to a first electric field intensity judgement signal corresponding to the entrance into the communication start area, and fetches the reception data in the signals received in the communication area.

3. A DSRC car-mounted equipment according to claim 1, wherein the reception sensitivity-increasing means includes:

a reception amplifier for amplifying a signal received from the on-the-road equipment;

an electric field intensity detector for producing an electric field intensity judgement signal upon detecting the electric field intensity of a signal through the reception amplifier; and

a reception control unit for controlling the amplification factor of the reception amplifier in response to the electric field intensity judgement signal; and wherein

the reception control unit changes the amplification factor of the reception amplifier into an amplification factor larger than the normal amplification factor in response to a first electric field intensity judgement signal corresponding to the entrance into the communication start area, and fetches the reception data in the signals received in the communication area.

4. A DSRC car-mounted equipment according to claim 1, wherein the reception sensitivity-increasing means changes the judging level into a highly sensitive judging level lower than the normal judging level in response to at least a first or a subsequent communication signal received from the on-the-road equipment after the entrance into the communication start area.

5. A DSRC car-mounted equipment according to claim 1, further comprising a vehicle speed control unit for producing a vehicle speed data of the vehicle, wherein the reception sensitivity-increasing means includes:

a predetermined value-setting means for setting a first predetermined value corresponding to a low-speed running state of the vehicle and a second predetermined value corresponding to a high-speed running state of the vehicle; and

a vehicle speed-judging means for comparing the vehicle speed data with the first and second predetermined values; wherein

when the vehicle speed data is smaller than the first predetermined value, the normal reception sensitivity is corrected toward the decreasing side; and

when the vehicle speed data is larger than the second predetermined value, the normal reception sensitivity is corrected toward the increasing side.

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6. A DSRC car-mounted equipment according to claim 1, further comprising transmission output-increasing means for increasing the transmission output to the on-the-road equipment in the communication area in response to the entrance into the communication start area, wherein the transmission output-increasing means returns the transmission output back to the normal transmission output of before entering into the communication start area in response to the end of communication with the on-the-road equipment

7. A DSRC car-mounted equipment according to claim 6, wherein the transmission output-increasing means includes:

a transmission amplifier for amplifying a signal transmitted to the on-the-road equipment; and

a transmission control unit for controlling the amplification factor of the transmission amplifier in response to a signal received from the on-the-road equipment; wherein

the transmission control unit changes the amplification factor of the transmission amplifier to an amplification factor larger than the normal amplification factor in response to at least a second or a subsequent communication signal received from the on-the-road equipment after the entrance into the communication start area.

8. A DSRC car-mounted equipment according to claim 1,

transmitted and received to and from the on-the-road equipment; and

an external storage medium connected to the car-mounted controller for exchanging data related to the toll collection; wherein

the car-mounted controller exchanges data related to the toll collection between the on-the-road equipment installed on a toll road and the external storage medium, and automatically executes the toll collection processing based on the data related to the toll collection.

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